

In the claims:

- 1 1. (Original) A solid pharmaceutical dosage form for oral administration, the dosage
2 form comprising:
 - 3 an extended release layer comprising a biguanide; and
 - 4 an immediate release layer comprising a sulfonylurea.
- 1 2. (Original) The dosage form of claim 1, wherein the biguanide comprises one or more
2 of metformin, phenformin, and buformin.
- 1 3. (Original) The dosage form of claim 1, wherein the biguanide is metformin.
- 1 4. (Original) The dosage form of claim 1, wherein the sulfonylurea comprises one or
2 more of glipizide, glimepiride, glibornuride, glyburide, glisoxepide, gliclazide,
3 acetohexamide, chlorpropamide, tolazamide and tolbutamide.
- 1 5. (Original) The dosage form of claim 1, wherein the sulfonylurea is glimepiride.
- 1 6. (Original) The dosage form of claim 1, wherein after oral administration the
2 biguanide is released over a period of about 4 to about 36 hours.
- 1 7. (Original) The dosage form of claim 6, wherein the biguanide is released over a
2 period of about 8 to about 24 hours.
- 1 8. (Cancelled) The dosage form of claim 1, wherein the dosage form comprises tablets
2 or capsules.
- 1 9. (Cancelled) The dosage form of claim 8, wherein the tablet includes a coating.
- 1 10. (Cancelled) The dosage form of claim 8, wherein the capsules include one or more of
2 pellets, beads, granules, multiparticulates, tablets and powder.
- 1 11. (Original) The dosage form of claim 1, wherein the extended release layer comprises
2 a matrix.
- 1 12. (Original) The dosage form of claim 11, wherein the matrix comprises a uniform
2 mixture of the biguanide and one or more rate controlling polymers.

1 13. (Cancelled) The dosage form of claim 12, wherein the one or more rate-controlling
2 polymers comprises hydrophilic polymers, hydrophobic polymers, or a combination thereof.

1 14. (Original) The dosage form of claim 11, wherein the matrix further comprises one or
2 more pharmaceutically acceptable excipients.

1 15. (Original) The dosage form of claim 14, wherein the pharmaceutically acceptable
2 excipients comprise one or more of diluents, lubricants, disintegrants, binders, glidants,
3 coloring agents, and flavoring agents.

1 16. (Original) The dosage form of claim 1, wherein the biguanide is layered onto a
2 pharmaceutically inert core or seed.

1 17. (Original) The dosage form of claim 16, wherein the inert core or seed is hydrosoluble
2 or hydroinsoluble.

1 18. (Original) The dosage form of claim 1, wherein the immediate release outer layer
2 further comprises film-forming polymers and optionally other pharmaceutically acceptable
3 excipients.

1 19. (Original) The dosage form of claim 18, wherein the film-forming polymers are
2 water-soluble polymers.

1 20. (Original) The dosage form of claim 18, wherein the pharmaceutically acceptable
2 excipients comprise one or more of plasticizers, opacifiers and colorants.

1 21. (Original) The dosage form of claim 1, further comprising one or more of glitazones,
2 insulin, alpha-glucosidase inhibitors, meglitinides, fibrates, statins, squalene synthesis
3 inhibitors and angiotensin-converting enzyme inhibitors.

1 22. (Original) The dosage form of claim 1, further comprising a wetting agent in the
2 immediate release layer, wherein the immediate release layer comprises a sulfonylurea and
3 the wetting agent in a weight ratio ranging from about 10:1 to about 1:25.

1 23. (Original) The dosage form of claim 22, wherein the wetting agent comprises one or
2 more of hydrophilic and hydrophobic surfactants.

1 24. (Original) The dosage form of claim 23, wherein the hydrophilic surfactants
2 comprises one or more of non-ionic surfactants, ionic surfactants or mixtures thereof.

1 25. (Cancelled) The dosage form of claim 23, wherein the hydrophobic surfactants
2 comprise one or more of alcohols; polyoxyethylene alkylethers; fatty acids; glycerol fatty
3 acid monoesters; glycerol fatty acid diesters; acetylated glycerol fatty acid monoesters;
4 acetylated glycerol fatty acid diesters, lower alcohol fatty acid esters; polyethylene glycol
5 fatty acid esters; polyethylene glycol glycerol fatty acid esters; polypropylene glycol fatty
6 acid esters; polyoxyethylene glycerides; lactic acid derivatives of monoglycerides; lactic acid
7 derivatives of diglycerides; propylene glycol diglycerides; sorbitan fatty acid esters;
8 polyoxyethylene sorbitan fatty acid esters; polyoxyethylene-polyoxypropylene block
9 copolymers, polyethyleneglycols as esters or ethers, polyethoxylated castor oil;
10 polyethoxylated hydrogenated castor oil, polyethoxylated fatty acid from castor oil or
11 polyethoxylated fatty acid from castor oil or polyethoxylated fatty acid from hydrogenated
12 castor oil.

1 26. (Cancelled) The dosage form of claim 24, wherein the non-ionic surfactants comprise
2 one or more of alkylglucosides; alkylmaltosides; alkylthioglucosides; lauryl
3 macrogolglycerides; caprylocaproyl macrogolglycerides, polyoxyethylene alkyl ethers;
4 polyoxyethylene alkylphenols; polyethylene glycol fatty acid esters; polyethylene glycol
5 glycerol fatty acid esters; polyoxyethylene sorbitan fatty acid esters; polyoxyethylene-
6 polyoxypropylene block copolymers; polyglycerol fatty acid esters; polyoxyethylene
7 glycerides; polyoxyethylene sterols, derivatives, and analogues thereof; polyoxyethylene
8 vegetable oils; polyoxyethylene hydrogenated vegetable oils; reaction products of polyols and
9 at least one member of the group consisting of fatty acids, glycerides, vegetable oils,
10 hydrogenated vegetable oils, and sterols; sugar esters, sugar ethers; sucroglycerides; and
11 mixtures thereof.

1 27. (Cancelled) The dosage form of claim 24, wherein the ionic surfactants comprise one
2 or more of alkyl ammonium salts; bile acids and salts, analogues, and derivatives thereof;
3 fatty acid derivatives of amino acids, oligopeptides, and polypeptides; glyceride derivatives
4 of amino acids, oligopeptides, and polypeptides; acyl lactylates; monoacetylated tartaric acid
5 esters of monoglycerides, monoacetylated tartaric acid esters of diglycerides, diacetylated
6 tartaric acid esters of monoglycerides, diacetylated tartaric acid esters of diglycerides;
7 succinylated monoglycerides; citric acid esters of monoglycerides; citric acid esters of

8 diglycerides; alginate salts; propylene glycol alginate; lecithins and hydrogenated lecithins;
9 lysolecithin and hydrogenated lysolecithins; lysophospholipids and derivatives thereof;
10 phospholipids and derivatives thereof; salts of alkylsulfates; salts of fatty acids; sodium
11 docusate; and mixtures thereof.

1 28. (Original) The dosage form of claim 1, wherein the extended release layer comprises
2 a core and the immediate release layer covers at least a portion of the core.

1 29. (Original) The dosage form of claim 1, wherein the dosage form comprises a
2 bilayered dosage form.

1 30. (Original) A process for preparing a solid, orally administered pharmaceutical dosage
2 form of an extended release core of a biguanide and an immediate release layer of a
3 sulfonylurea, the process comprising:

4 a. dispersing the biguanide in a solid matrix to form a core having a surface; and
5 b. layering the immediate release layer of the sulfonylurea on the surface of the core.

1 31. (Original) The process of claim 30, wherein layering the immediate release layer
2 further comprises layering one or more wetting agents.

1 32. (Original) The process of claim 31, wherein the sulfonylurea and the one or more
2 wetting agents are present in the immediate release layer in a weight ratio ranging from about
3 10:1 to about 1:25.

1 33. (Cancelled) The process of claim 31, wherein the one or more wetting agents
2 comprise one or both of hydrophilic and hydrophobic surfactants.

1 34. (Cancelled) The process of claim 33, wherein the hydrophilic surfactants comprise
2 one or more of non-ionic surfactants, ionic surfactants and mixtures thereof.

1 35. (Cancelled) The process of claim 33, wherein the hydrophobic surfactants comprise
2 one or more of alcohols; polyoxyethylene alkylethers; fatty acids; glycerol fatty acid
3 monoesters; glycerol fatty acid diesters; acetylated glycerol fatty acid monoesters; acetylated
4 glycerol fatty acid diesters, lower alcohol fatty acid esters; polyethylene glycol fatty acid
5 esters; polyethylene glycol glycerol fatty acid esters; polypropylene glycol fatty acid esters;
6 polyoxyethylene glycerides; lactic acid derivatives of monoglycerides; lactic acid derivatives
7 of diglycerides; propylene glycol diglycerides; sorbitan fatty acid esters; polyoxyethylene

8 sorbitan fatty acid esters; polyoxyethylene-polyoxypropylene block copolymers,
9 polyethyleneglycols as esters or ethers, polyethoxylated castor oil; polyethoxylated
10 hydrogenated castor oil, polyethoxylated fatty acid from castor oil or polyethoxylated fatty
11 acid from castor oil or polyethoxylated fatty acid from hydrogenated castor oil.

1 36. (Cancelled) The process of claim 34, wherein the non-ionic surfactants comprise one
2 or more of alkylglucosides; alkylmaltosides; alkylthioglucosides; lauryl macrogolglycerides;
3 caprylocaproyl macrogolglycerides, polyoxyethylene alkyl ethers; polyoxyethylene
4 alkylphenols; polyethylene glycol fatty acid esters; polyethylene glycol glycerol fatty acid
5 esters; polyoxyethylene sorbitan fatty acid esters; polyoxyethylene-polyoxypropylene block
6 copolymers; polyglycerol fatty acid esters; polyoxyethylene glycerides; polyoxyethylene
7 sterols, derivatives, and analogues thereof; polyoxyethylene vegetable oils; polyoxyethylene
8 hydrogenated vegetable oils; reaction products of polyols and at least one member of the
9 group consisting of fatty acids, glycerides, vegetable oils, hydrogenated vegetable oils, and
10 sterols; sugar esters, sugar ethers; sucroglycerides; and mixtures thereof.

1 37. (Cancelled) The process of claim 34, wherein the ionic surfactants comprise one or
2 more of alkyl ammonium salts; bile acids and salts, analogues, and derivatives thereof; fatty
3 acid derivatives of amino acids, oligopeptides, and polypeptides; glyceride derivatives of
4 amino acids, oligopeptides, and polypeptides; acyl lactylates; monoacetylated tartaric acid
5 esters of monoglycerides, monoacetylated tartaric acid esters of diglycerides, diacetylated
6 tartaric acid esters of monoglycerides, diacetylated tartaric acid esters of diglycerides;
7 succinylated monoglycerides; citric acid esters of monoglycerides; citric acid esters of
8 diglycerides; alginate salts; propylene glycol alginate; lecithins and hydrogenated lecithins;
9 lysolecithin and hydrogenated lysolecithins; lysophospholipids and derivatives thereof;
10 phospholipids and derivatives thereof; salts of alkylsulfates; salts of fatty acids; sodium
11 docusate; and mixtures thereof.

1 38. (Cancelled) The process of claim 30, wherein the biguanide comprises one or more of
2 metformin, phenformin and buformin.

1 39. (Cancelled) The process of claim 30, wherein the biguanide comprises metformin.

1 40. (Cancelled) The process of claim 30, wherein the sulfonylurea comprises one or more
2 of glipizide, glimepiride, glibornuride, glyburide, glisoxepide, gliclazide, acetohexamide,
3 chlorpropamide, tolazamide and tolbutamide.

- 1 41. (Cancelled) The process of claim 30, wherein the sulfonylurea comprises glimepiride.
- 1 42. (Original) The process of claim 30, wherein after oral administration the biguanide is
2 released over a period of about 4 to about 36 hours.
- 1 43. (Original) The process of claim 42, wherein the biguanide is released over a period of
2 about 8 to about 24 hours.
- 1 44. (Cancelled) The process of claim 30, further comprising forming a tablet or a capsule.
- 1 45. (Cancelled) The process of claim 44, further comprising coating the tablet.
- 1 46. (Cancelled) The process of claim 45, wherein the capsule contains one or more of
2 pellets, beads, granules, multiparticulates, tablets and powder.
- 1 47. (Cancelled) The process of claim 48, wherein the core comprises a matrix.
- 1 48. (Cancelled) The process of claim 30, wherein the matrix comprises a uniform mixture
2 of the biguanide and one or more rate controlling polymers.
- 1 49. (Cancelled) The process of claim 48, wherein the one or more rate-controlling
2 polymers comprise one or both of hydrophilic and hydrophobic polymers.
- 1 50. (Cancelled) The process of claim 30, wherein the matrix further comprises one or
2 more pharmaceutically acceptable excipients.
- 1 51. (Cancelled) The process of claim 50, wherein the pharmaceutically acceptable
2 excipients comprise one or more of diluents, lubricants, disintegrants, binders, glidants,
3 colorants, and flavorants.
- 1 52. (Original) The process of claim 30, wherein the biguanide is layered onto
2 pharmaceutically inert core or seeds.
- 1 53. (Cancelled) The process of claim 52, wherein the inert core or seeds are hydrosoluble
2 or hydroinsoluble.
- 1 54. (Original) The process of claim 30, wherein the immediate release outer layer further
2 comprises film-forming polymers and optionally other pharmaceutically acceptable
3 excipients.

1 55. (Cancelled) The process of claim 54, wherein the film-forming polymers comprise
2 water-soluble polymers.

1 56. (Cancelled) The process of claim 54, wherein the pharmaceutically acceptable
2 excipients comprise one or more of plasticizers, opacifiers and colorants.

1 57. (Original) The process of claim 30, further comprising placing a seal-coat over the
2 core, wherein the seal-coat comprises hydrophilic polymers.

1 58. (Original) A process for preparing a bilayered, solid, orally administered
2 pharmaceutical dosage form of a biguanide and a sulfonylurea, the process comprising:
3 a. dispersing the biguanide in an extended release carrier base material;
4 b. separately dispersing the sulfonylurea in an immediate release carrier base material;
5 and
6 c. compressing the materials of step a and step b to form the bilayered dosage form.

1 59. (Original) The process of claim 58, wherein the immediate release carrier base
2 material further comprises one or more wetting agents before or after dispersing the
3 sulfonylurea.

1 60. (Original) The process of claim 59, wherein the sulfonylurea and the one or more
2 wetting agents are present in a weight ratio ranging from about 10:1 to about 1:25.

1 61. (Cancelled) The process of claim 59, wherein the one or more wetting agents
2 comprise one or both of hydrophilic and hydrophobic surfactants.

1 62. (Cancelled) The process of claim 61, wherein the hydrophilic surfactants comprise
2 one or more of non-ionic surfactants, ionic surfactants or mixtures thereof.

1 63. (Cancelled) The process of claim 61, wherein the hydrophobic surfactants comprise
2 one or more of alcohols; polyoxyethylene alkylethers; fatty acids; glycerol fatty acid
3 monoesters; glycerol fatty acid diesters; acetylated glycerol fatty acid monoesters; acetylated
4 glycerol fatty acid diesters, lower alcohol fatty acid esters; polyethylene glycol fatty acid
5 esters; polyethylene glycol glycerol fatty acid esters; polypropylene glycol fatty acid esters;
6 polyoxyethylene glycerides; lactic acid derivatives of monoglycerides; lactic acid derivatives

7 of diglycerides; propylene glycol diglycerides; sorbitan fatty acid esters; polyoxyethylene
8 sorbitan fatty acid esters; polyoxyethylene-polyoxypropylene block copolymers,
9 polyethyleneglycols as esters or ethers, polyethoxylated castor oil; polyethoxylated
10 hydrogenated castor oil, polyethoxylated fatty acid from castor oil or polyethoxylated fatty
11 acid from castor oil or polyethoxylated fatty acid from hydrogenated castor oil.

1 64. (Cancelled) The process of claim 62, wherein the non-ionic surfactants comprise one
2 or more of alkylglucosides; alkylmaltosides; alkylthioglucosides; lauryl macrogolglycerides;
3 caprylocaproyl macrogolglycerides, polyoxyethylene alkyl ethers; polyoxyethylene
4 alkylphenols; polyethylene glycol fatty acid esters; polyethylene glycol glycerol fatty acid
5 esters; polyoxyethylene sorbitan fatty acid esters; polyoxyethylene-polyoxypropylene block
6 copolymers; polyglycerol fatty acid esters; polyoxyethylene glycerides; polyoxyethylene
7 sterols, derivatives, and analogues thereof; polyoxyethylene vegetable oils; polyoxyethylene
8 hydrogenated vegetable oils; reaction products of polyols and at least one member of the
9 group consisting of fatty acids, glycerides, vegetable oils, hydrogenated vegetable oils, and
10 sterols; sugar esters, sugar ethers; sucroglycerides; and mixtures thereof.

1 65. (Cancelled) The process of claim 62, wherein the ionic surfactants comprise one or
2 more of alkyl ammonium salts; bile acids and salts, analogues, and derivatives thereof; fatty
3 acid derivatives of amino acids, oligopeptides, and polypeptides; glyceride derivatives of
4 amino acids, oligopeptides, and polypeptides; acyl lactylates; monoacetylated tartaric acid
5 esters of monoglycerides, monoacetylated tartaric acid esters of diglycerides, diacetylated
6 tartaric acid esters of monoglycerides, diacetylated tartaric acid esters of diglycerides;
7 succinylated monoglycerides; citric acid esters of monoglycerides; citric acid esters of
8 diglycerides; alginate salts; propylene glycol alginate; lecithins and hydrogenated lecithins;
9 lysolecithin and hydrogenated lysolecithins; lysophospholipids and derivatives thereof;
10 phospholipids and derivatives thereof; salts of alkylsulfates; salts of fatty acids; sodium
11 docusate; and mixtures thereof.

1 66. (Cancelled) The process of claim 58, wherein the biguanide is selected from one or
2 more of metformin, phenformin and buformin.

1 67. (Cancelled) The process of claim 58, wherein the biguanide comprises metformin.

1 68. (Cancelled) The process of claim 58, wherein the sulfonylurea is selected from one or
2 more of glipizide, glimepiride, glibornuride, glyburide, glisoxepide, gliclazide,
3 acetohexamide, chlorpropamide, tolazamide and tolbutamide.

1 69. (Cancelled) The process of claim 58, wherein the sulfonylurea is glimepiride.

1 70. (Cancelled) The process of claim 58, wherein after oral administration the biguanide
2 is released over a period of about 4 to about 36 hours.

1 71. (Cancelled) The process of claim 70, wherein the biguanide is released over a period
2 of about 8 to about 24 hours.

1 72. (Cancelled) The process of claim 58, further comprising forming a tablet or a capsule.

1 73. (Cancelled) The process of claim 72, further comprising coating the tablet.

1 74. (Cancelled) The process of claim 72, wherein the capsule contains one or more of
2 pellets, beads, granules, multiparticulates, tablets and powder.

1 75. (Cancelled) The process of claim 58, wherein the biguanide layer comprises a matrix.

1 76. (Cancelled) The process of claim 75, wherein the matrix comprises a uniform mixture
2 of the biguanide and one or more rate controlling polymers.

1 77. (Cancelled) The process of claim 76, wherein the one or more rate-controlling
2 polymers comprise either or both of hydrophilic and hydrophobic polymers.

1 78. (Cancelled) The process of claim 75, wherein the matrix further comprises one or
2 more pharmaceutically acceptable excipients.

1 79. (Cancelled) The process of claim 78, wherein the pharmaceutically acceptable
2 excipients comprise one or more of diluents, lubricants, disintegrants, binders, glidants,
3 colorants, and flavorants.

1 80. (Original) The process of claim 58, wherein the biguanide is layered onto
2 pharmaceutically inert core or seeds.

1 81. (Original) The process of claim 80, wherein the inert core or seeds are hydrosoluble
2 or hydroinsoluble.

1 82. (Cancelled) The process of claim 58, wherein the immediate release carrier base
2 material further comprises film-forming polymers and optionally other pharmaceutically
3 acceptable excipients.

1 83. (Cancelled) The process of claim 82, wherein the film-forming polymers comprise
2 water-soluble polymers.

1 84. (Cancelled) The process of claim 82, wherein the pharmaceutically acceptable
2 excipients comprise one or more of plasticizers, opacifiers and colorants.

1 85. (Cancelled) The process of claim 58, further comprising providing a seal-coat of one
2 or more hydrophilic polymers between the two layers.

1 86. (Original) A method of treating non-insulin dependent diabetes mellitus in a patient in
2 need thereof, the method comprising administering a solid, pharmaceutical dosage form of
3 the combination of a biguanide and a sulfonylurea, wherein the dosage form provides
4 extended-release of the biguanide and immediate release of the sulfonylurea.

1 87. (Original) The method of claim 86, wherein the biguanide comprises one or more of
2 metformin, phenformin, and buformin.

1 88. (Original) The method of claim 86, wherein the biguanide is metformin.

1 89. (Original) The method of claim 86, wherein the sulfonylurea comprises one or more
2 of glipizide, glimepiride, glibornuride, glyburide, glisoxepide, gliclazide, acetohexamide,
3 chlorpropamide, tolazamide and tolbutamide.

1 90. (Original) The method of claim 86, wherein the sulfonylurea is glimepiride.

1 91. (Cancelled) The method of claim 86, wherein after oral administration the biguanide
2 is released over a period of about 4 to about 36 hours.

1 92. (Cancelled) The method of claim 86, wherein the biguanide is released over a period
2 of about 8 to about 24 hours.

1 93. (Cancelled) The method of claim 86, wherein the dosage form comprises tablets or
2 capsules.

- 1 94. (Original) The method of claim 86, wherein the dosage form further comprises one or
- 2 more of glitazones, insulin, alpha-glucosidase inhibitors, meglitinides, fibrates, statins,
- 3 squalene synthesis inhibitors and angiotensin-converting enzyme inhibitors.